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Khan, Abdul Qayyum Khan and Khattak, Naeem Ur
Rehman Khattak and Hussain, Anwar Hussain

Pakistan Institute of Development Economics Islamabad Pakistan

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INTER-RELATIONSHIP OF GROSS DOMESTIC PRODUCT (GDP) GROWTH AND UNEMPLOYMENT IN PAKISTAN (1960-2005)

Abdul Qayyum Khan¹, Naeem-ur-Rehman Khattak² and Anwar Hussain³

ABSTRACT

This paper critically analyzes the effect of growth in real GDP on reduction in unemployment. In this paper deviated value of GDP and unemployment from long term trend is used. Annual data for the period 1960-2005, taken from Economic Survey of Pakistan and International Financial Statistic is used for analysis. The study revealed that growth in real GDP is negatively related to unemployment. The negative effect of GDP growth on unemployment reduction is low, implies that other factors like loose employment policies and non availability of professional skills retard the employment generating capacity of GDP growth rate. The results signify the threshold level of GDP growth rate. Based on the findings of the study it is recommended that market based economy development is needed. Privatization which is believed to be depending on efficiency may help in this regard. Long term skill development and merit based recruitment policies may also accelerate employment generating capacity of output growth. If government of Pakistan want to retard unemployment they must maintain GDP growth rate above the threshold level other wise unemployment will rise instead of retarding it.

Key words: GDP growth, unemployment, deviated GDP and unemployment, threshold level of GDP growth.

INTRODUCTION

Under the influence of the “Keynesian revolution” most economists thought that high employment and stability could be accomplished through appropriate manipulation of budget (Martino, 1998). In recent times, however, a reversion in the profession’s conventional lore has been proved. Deficits are now being held responsible for a lot of different economic evils.

^{1 and 3} PhD Scholars, Department of Economics University of Peshawar

² Professor and Dean, Faculty of Social Sciences, Department of Economics University of Peshawar

Pakistan, like all other developing countries also faced stern fiscal deficit from the very beginning. In the context of fiscal deficit, the basic feature of the problem is that the government has strict fiscal constraints to start major initiatives for improving the economy or directly attacking deficit either through reduction of government expenditures or increase taxes. In most of the previous decades Pakistan deeply relied on strictly bounded donor's conditionality foreign loan. These foreign loans further widened the burden of expenditure, instead to ease the way for boosting up of economy. In the last decade due to large foreign loan and disappointing relation with donor's agencies Pakistan was near to become defaulter. After 9/11 the sympathetic outside environment and prudent fiscal policies of present government trim down fiscal deficit and improve economic growth. Pakistan fiscal deficit decreased and GDP growing constantly in last five years (IDA, 2007).

In Pakistan national saving and investment remained low, due to persistent fiscal imbalances, deterring growth performance. Many developing countries have administered to sustain relatively large deficits, but such deficits are improbable to be sustainable because the economy grows faster than government debt in the long run. During the 1980's in Pakistan the fiscal deficit as a percentage of GDP averaged over 7% and financed largely through wide controls on financial markets, comparatively strong monetary growth and external borrowing, growth also averaged 6% in the 1980s. In the early 1990s unfavorable supply conditions increased the fiscal deficit to over 9% of GDP and the escalating external debt burden ultimately led to a financial and exchange market crisis in 1993, followed by a quick turn down of growth to about 2.5%(Mangi, 1996).

The period of 1989-1999, has been marked by a great deal of sluggish economic growth, recurring foreign exchange crisis and political instability. Frequent

removal of government leading to successive elections did not give strong and clear mandate or stability. During this period the overall GDP growth rate averaged over 4%, fiscal deficit averaged over 6%, while total investment and total revenue averaged over 18% and 17% of GDP respectively. During 1999-2005, the overall budget deficit to GDP ratio decreased to 3% in 2005 from 6.1% in 1999, GDP real growth increased from 4.2% in 1999 to 8.4% in 2005. Government total revenues decreased from 15.9% of GDP in 1999 to 13% of GDP in 2005. Total expenditure goes down to 16% of GDP in 2005, from 22.0% of GDP in 1999(Economic Surveys of Pakistan, 2005-06).

National Development Volunteer Program (NDVP) and the People Work Program (PWP), the two initiatives designed to benefit the poor were enfeebled due to financial constraint following the huge non development expenditures. The aim of the former was to provide employment to educated unemployed and the latter to generate employment opportunities for the rural poor through labour intensive projects. Both of these programs were marginalized due to budgetary constraints (Noman, 1988).

GDP growth declined from 6.3 % in the 1980s to 4.2 % in the 1990s. The employment problem persisted during the 1990s, as employment growth has continued to remain at a low level of 2.4 % since the 1980s. During the 1990s, labour productivity growth declined and both in agriculture and industry real wages of casual hired labour declined (Majid, 1997).

The employment elasticity in the manufacturing sector sharply reduced to minus 0.10 in the 1990s from 0.17 in the 1980s, while slight declined seemed in agriculture. In construction and trade industries employment elasticity significantly increased over the two decades (ILO/SAAT, December 1997). The employment and poverty crisis during the 1990s was due to the combined

declining effect of output growth and employment elasticity in manufacturing and agriculture. Agriculture and manufacturing have historically engaged large number of employed labor force in Pakistan. In 1969-70, for example, 72.6 % of the total employed labor force was employed in these two sectors. This percentage fell by the mid-nineties, but was still over 60 % (Hussain, 2004).

The empirical evidence regarding the effect of GDP growth on unemployment is not conclusive. In the late forties, Verdoorn published a paper stating a close linear relationship between the growth of industrial output and labour productivity in the long run. Verdoorn found an elasticity of productivity with respect to industrial production of 0.45 (which he used for projections of productivity).

Verdoorn and later also Kaldor interpreted the productivity elasticities ("Verdoorn coefficients") as indicators of increasing returns to scale due to a higher division of labour. The results of Kaldor's cross-country study were similar to that of Verdoorn: An increase in output growth of 1 % leads to an increase in productivity and employment growth of half a percentage point each. It should be noted: The higher the productivity effects of growth, the more difficult it will be to keep unemployment from rising.

Okun, at the high-tide of Keynesianism, referred to a stable relation between GDP growth and the change in the unemployment rate. According to "Okun's Law" an increase of the economic growth rate by 3 percent (above the normal rate) was expected to reduce the unemployment rate by 1 percentage point. Or, to put it the other way round: The gain of real GDP associated with a reduction in unemployment of one percentage point was estimated to be 3 percent.

The Okun-relationship may also be demonstrated by the correlation of unemployment rates with deviations of potential from actual GDP. Okun's Law covers the short-run productivity gains from higher capacity utilization, longer

working hours (overtime) and less labour hoarding associated with output growth. This overlaps with Verdoorn's Law, which states a linear relationship between the growth of GDP and labour productivity in the long run, with increasing returns to scale as an important determinant. Okun's Law neglects the influence of investment activity and technical progress on labour productivity.

One important labour market implication of these theoretical considerations is: The higher the Okun coefficient (usually 0.3 to 0.5), i.e., the elasticity of unemployment rates with respect to GDP growth, the better the chances for reducing unemployment through growth and demand policies.

In this paper, attempt has been made to favor, a revival of the old macroeconomic relationships as they were analyzed by Verdoorn, Kaldor, Okun and others.

Objective of the study

The main objective of this study is to analyze the inter-relationship of gross domestic product (GDP) and unemployment.

MATERIALS AND METHODS

For the analysis, time series data ranging from 1960-2005 has been used, taken from Economic Survey of Pakistan, and International Financial Statistics. To determine the stationarity of data, an Augmented Dickey-Fuller (ADF) test was used. The Akaike information criterion was used to select the optimum ADF lag. Stationarity of the variables were checked once with an intercept was included only, and again when both an intercept and a linear deterministic trend was included. Variables which were non-stationary at level made stationary after taking first difference. Johansen cointegration test was used to ascertain the cointegration in the regressions used for analysis. To assess the inter-relationship between gross domestic product (GDP) and unemployment, the following Okun's law was used.

$$\Delta UE_t = -\beta (\text{GDP} - \text{Long term trend in Growth}) \quad (1)$$

Where $-\beta$ is the coefficient which indicates that each one percent increase in real GDP above long term trend in growth will reduce unemployment by β percent. Long term trend is calculated by plotting GDP through scatter graph and include trend in it, the intercept of the equation is taken as the long term trend. Similarly ΔUE_t is equal to unemployment rate plus long term trend in unemployment. Long term trend in unemployment is obtained by plotting unemployment through scatter graph and include trend in it, the intercept of the equation is taken as the long term trend. We do not go into the scatter graph presentation due to space limitation, but our ultimate goal is to determine long term trend in GDP and in unemployment.

RESULTS AND DISCUSSION

Table I presents the results of the unit root test. Both gross domestic product and unemployment are nonstationary when intercept is included only, and remain nonstationary when trend is included alongside intercept.

Table I ADF test for stationarity

Variables	Include intercept only		Include intercept and trend		Result
	Test statistics ¹	Critical Value	Test statistics ¹	Critical Value	
GDP	0.0812[0]	-3.5814	-4.0627[0]	-4.1728	I(1)*
	(-6.8740) [1]	-3.5850	(-9.4101)[2]	-4.1781	I(1)**
UE	-0.8091[1]	-3.5814	-3.5134[1]	-4.1728	I(1)*
	(-6.3643) [2]	-3.5850	(-6.3048)[2]	-4.1781	I(1)**

¹Figures in square brackets besides each statistics represent optimum lags selected using the minimum AIC value.

²Figures in Parentheses are first difference of variables, * shows result when intercept is included only,

** show results when intercept and trend is included.

The results of Likelihood Ratio (LR) test is presented in table II. There is possibility of spurious regression, due to non-stationary time series variables. But when performed Johansen's cointegration test, long run relationships were found. The Likelihood Ratio (LR) test results reject the assumption of no cointegration, and indicate the existence of one cointegrating equation as the calculated value of Likelihood Ratio (LR) is greater than the critical values at 1 percent.

Table II Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. (Variables included in the cointegrating vector: GDP and UE).

Test assumption: No deterministic trend in the data. Lag interval is 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.5513	39.54	19.96	24.60	None **
0.0925	4.27	9.24	12.97	At most 1

*(**) denotes rejection of the hypothesis at 5 % (1%) significance level

L.R. test indicates 1 cointegrating equation(s) at 5% significance level

The result of Okun's Law is presented in table III. Long term trend value of GDP growth is 5.99 and long term trend value of unemployment is .2043. Both these values are derived from plotting GDP and unemployment through scatter graphs.

Table III Regression Results of Okun's Law equation

UEALTT = - 0.629 GDPALTT				
Predictor	Coef	StDev	T	P
No constant				
GDPALTT	-0.6287	0.2674	-2.35	0.023
S.E of regression = 1.930		R-sq = 18.4%		
Durbin-Watson statistic = 2.18		R-sq (adj) = 16.5%		

Where UEALTT is unemployment rate after long term trend in unemployment

GDPALTT is GDP growth rate after long term trend in GDP

Placing the value of coefficient and long term trend in GDP growth and unemployment, equation 1 can be written as

$$\begin{aligned}
 (UE + .2043) &= -.63 (GDP - 5.99) \\
 UE &= -.63 (GDP - 5.99) - .2043 \quad (2)
 \end{aligned}$$

This result indicates that in Pakistan each 1% increase in real GDP above 5.99% will reduce unemployment by .63%. The R² value shows that only 18.4% of variation in unemployment is explained by GDP, indicating that there are many other variables which are responsible for the variation in unemployment. The negative effect of GDP growth on unemployment is 0.63. This low negative effect

implies that other factors i.e. loose employment policies and non availability of professional skills retard the employment generating capacity of GDP growth rate.

Growth rate of 7.25% in real GDP is required to reduce the unemployment rate by 1%, 8.84% growth rate in real GDP is required to reduce the unemployment rate by 2%, growth rate of 10.43% in real GDP is required to reduce the unemployment rate by 3%. In similar fashion a desired growth rate can be determine, for desired reduction in unemployment rate. Placing the above cited value of growth rate in real GDP in equation 2 confirm the respective unemployment rate.

CONCLUSION AND RECOMMENDATION

The study revealed that the threshold level of GDP is 5.99 %, one percent increase in real GDP growth above this threshold level will reduce unemployment by .63%. To reduce the unemployment rate by 1%, 2% and 3% real GDP growth rate must raise to 7.25%, 8.84% and 10.43% respectively.

Based on these evidences it is obvious that consistent fiscal policies are important to maintain GDP growth rate above the required rate for unemployment reduction. Market based and open economy development is needed. Privatization which is supposed to be depending on competence may be beneficial in this regard. Long term skill development and merit based recruitment policies may also accelerate employment generating capability of output growth. If Pakistan's government want to retard unemployment they must maintain GDP above this threshold level other wise unemployment will rise instead of impeding it.

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